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I, ANNA MAIJA MADL, ACTING TEAM LEADER EXAMINATION SUPPORT & SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PP 7170 for a patent by THE UNIVERSITY OF SYDNEY filed on 12 November 1998.

WITNESS my hand this
Twentieth day of December 1999

A M Madl

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AUSTRALIA

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PROVISIONAL SPECIFICATION

Applicant(s):

THE UNIVERSITY OF SYDNEY

Invention Title:

DIODE ARRAY SIDE-PUMPING OF WAVEGUIDES

The invention is described in the following statement:

mode waveguide.

Brief Description of the Drawings

Notwithstanding any other forms which may fall within the scope of the present invention, preferred forms of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 illustrated a first example embodiment of the present invention;

Fig. 2 illustrates a second example embodiment of the present invention;

Fig. 3 illustrates a third example embodiment;

Fig. 4 illustrates a fourth example embodiment;

Fig. 5 illustrates utilization of the principle of the present invention in a multi-mode interference device; and

Fig. 6 illustrates a further embodiment of the present invention

Description of Preferred and Other Embodiments

In the preferred embodiments, a single diode array is utilized as a single source for the pumping of multiple waveguides at one time.

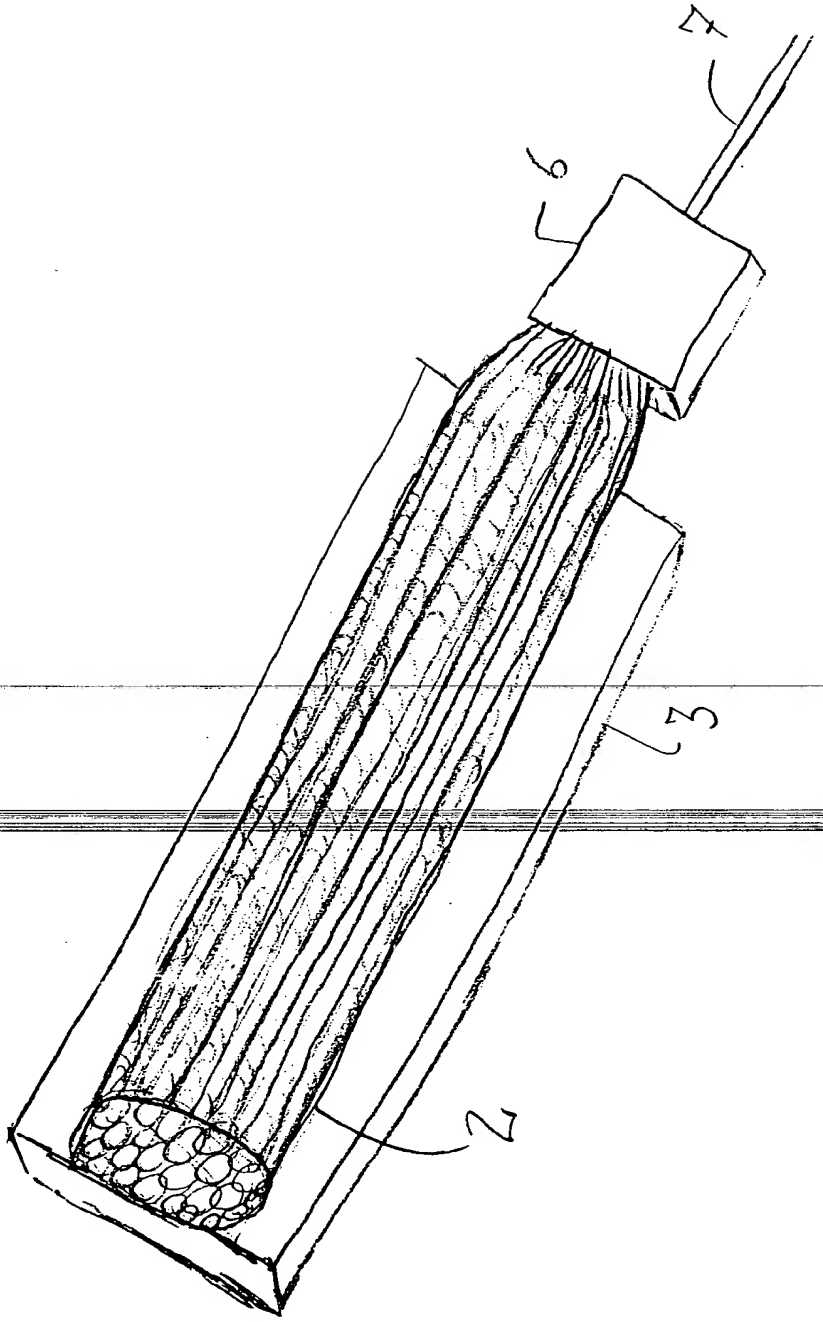
For example, turning initially to Fig. 1, there is illustrated a first example embodiment of the present invention. In this embodiment, a series or bundle of distributed feedback (DFB) fibre lasers, which can include tuned Bragg grating structures to provide for particular frequency characteristics, are pumped by a diode bar 3. In the example, 32 DFB lasers are assumed to be provided. Of course, alternative arrangements are possible for example, the fibres could be more spaced apart and form a single layer on the diode bar. Obviously, many different slacking arrangements are possible. The diode bar 3 acts as a high intensity pump which causes the DFB lasers to laze. The fibres are attached together by a 32 to 1 splitter 6 so as to provide output 7 having multiple combined frequency channels.

The principles of Fig. 1 can be extended to other

for high output power 53 pump wavelength which in turn can be utilized to pump other devices.

It would be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

Fig 1



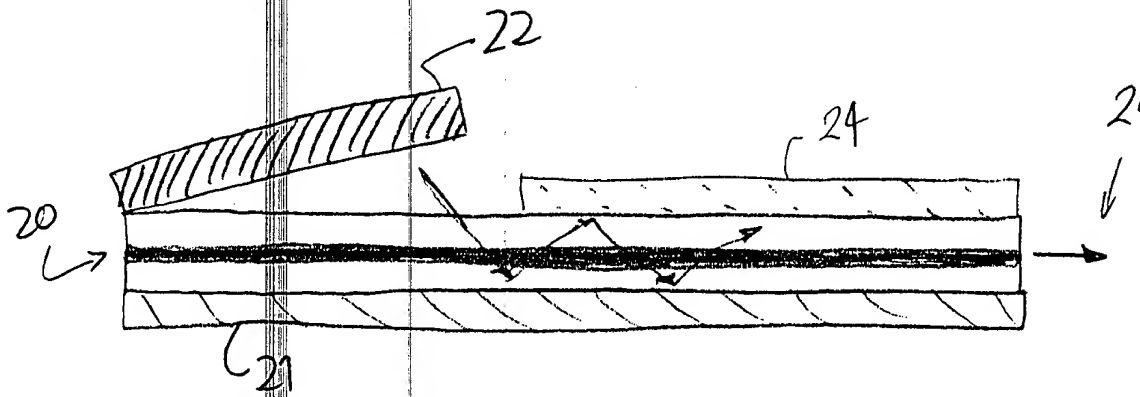


Fig. 3

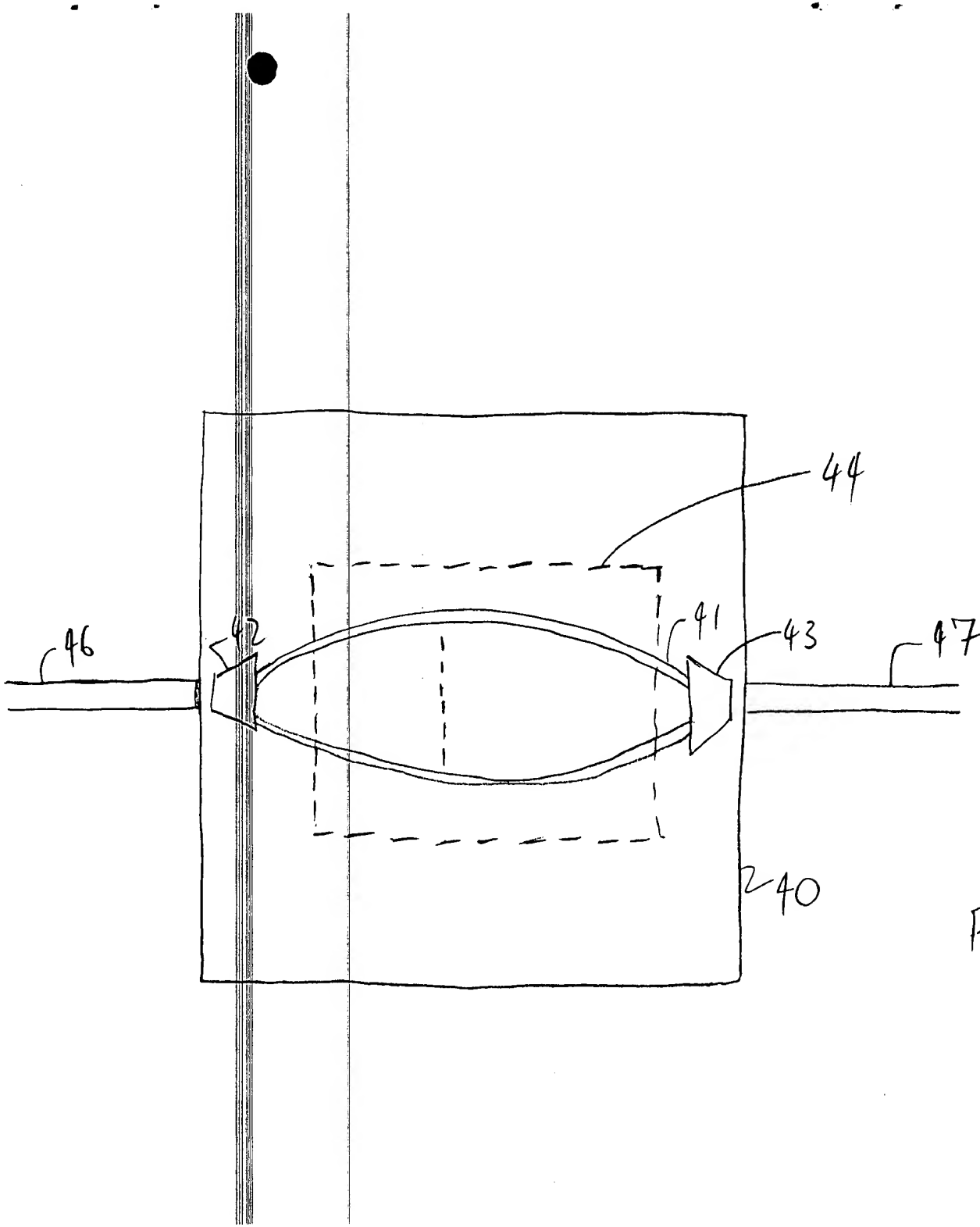


Fig. 5

Abstract

A multiple distributed feedback laser system comprising: at least one array of closely spaced diodes emitting pump wavelength energies; a plurality of distributed feedback waveguides spaced closely adjacent the array and each adapted to produce a laser output upon pumping by the diodes. The waveguides lase at a range of different frequencies.